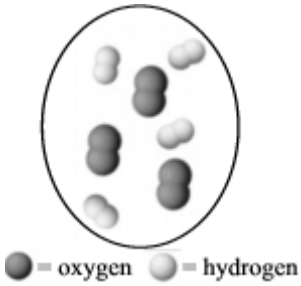
Chemistry
Ticket Out the Door
Set 36: Gas Stoichiometry

Name _____ Period _____

Skill 36.01 Problem 1

The following mixture of gases is confined to a flexible container. A spark causes the mixture to react forming H_2O. Assuming STP conditions and no resistance from the container,



(a) What are the total moles of gases in the container after the reaction is complete?

(b) What is the final volume?

Skill 36.01 Problem 2

Propane C_3H_8 completely combusts according to the following equation,

$C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

What will be the volume of carbon dioxide produced in the reaction?

Skill 36.02 Problem 1

Methanol readily combusts as follows,

$2CH_3OH(g) + 3O_2(g) \rightarrow 2CO_2(g) + 4H_2O(g)$

If 5.0 L of methanol reaction, how much, in moles, of water vapor will be produced?

Name _____ Period _____

Skill 36.03 Problem 1

Sodium reacts with water through single replacement as follows,

$2Na(s) + 2H_2O(l) \rightarrow 2NaOH(s) + H_2(g)$

How much sodium is required to produce 500. L of hydrogen gas?

Skill 36.04 Problem 1

Sodium reacts with water through single replacement as follows,

$2Na(s) + 2H_2O(l) \rightarrow 2NaOH(s) + H_2(g)$

If 2.5 moles of sodium react, what volume of hydrogen gas will be produced?

Skill 36.05 Problem 1

Sodium reacts with water through single replacement as follows,

$2Na(s) + 2H_2O(l) \rightarrow 2NaOH(s) + H_2(g)$

If 2.0 g of sodium react, what volume of hydrogen gas will be produced?

Name _____ Period _____

Set 36.0 Summary

In the early stages of solving stoichiometry problems it is useful to know what steps to combine for a given type of problem. For this reason, I have provided figure 2. Keep in mind however, you will not be permitted to use this on quizzes or exams. Only through practice will you acquire independence from this guide.

Figure 2. How to solve gas stoichiometry problems

Type	Steps
volume-volume	volume given x volume ratio $\frac{\text{unknown}}{\text{given}}$ = volume unknown
volume-moles	Use PV=nRT to find moles from volume moles given x mole ratio $\frac{\text{unknown}}{\text{given}}$ = moles unknown
volume – mass	Use PV=nRT to find moles from volume moles given x mole ratio $\frac{\text{unknown}}{\text{given}}$ x $\frac{\text{molar mass unknown (g)}}{\text{1 mole unknown}}$ = mass unknown (g)
mole - volume	moles given x mole ratio $\frac{\text{unknown}}{\text{given}}$ = moles unknown use PV=nRT to find volume from moles
mass - volume	

Name _____ Period _____

	mass given x $\frac{1 \text{ mole given}}{\text{molar mass given (g)}}$ x mole ratio $\frac{\text{unknown}}{\text{given}}$ = moles unknown use PV=nRT to find volume from moles